

REMARKS

1. The Examiner has objected to the drawings/claims, asserting that the drawings did not show the "beam" recited in Claims 1,13,16,17. The specification has been amended to correct the incorrect reference to reference numeral 22 on page 20, line 3 and a duplicate reference has been removed from supplied corrected Figure 6 attached at the end of this Amendment, so that beam (36) is correctly indicated.

2. The Examiner has objected to the specification for informalities. The specification has been amended to remove the informalities.

3. The Examiner has questioned (referring to Claims 4 and 18), how a coating can produce an optical resonant cavity. On page 22, line 1 of the specification, the partially reflective surface is disclosed as optionally being a coating. Applicants have Amended Claims 4 and 18, and further point out that the specification teaches a coating as pointed out above. It is well known that a partially reflective coating is formed by a transparent layer with a partially reflective layer included therein.

4. The Examiner has rejected Claims 4 and 18 under 35 U.S.C. §112 as not being described by the specification sufficiently to enable one skilled in the art to make and/or use the invention. Partially

reflective coatings are well known in the art. Therefore, one of ordinary skill in the art would understand how to apply such a coating to form the partially reflective surface element of the present invention.

5. The Examiner has rejected Claims 3 under 35 U.S.C. §112 as not reciting an antecedent basis for "device". Claim 3 has been amended to overcome the rejection.

Thus, Applicant believes that the objections to the Specification and rejections of Claims under 35 U.S.C. §112 have been overcome.

Rejections under 35 U.S.C. §103(a)

The Examiner has rejected Claims 1-23 under 35 U.S.C. §103(a) as being unpatentable over White (U.S. 3,901,597) in view of prior art Figure 1 of the application. Applicant respectfully disagrees and traverses the rejection. Claim 1 (and dependent Claims 2-12, similarly independent Claims 13, 16 and 17 and their dependent claims 14-15 and 18-23) recites a partially reflective surface illuminated by an illumination source and positioned between the surface under inspection and the optical illumination system and forming a resonator with the surface under inspection. Claim 1 further recites that a signal generated by light reflected from defects on the surface under inspection that exceed a

predetermined height is increased due to multiple reflections within the resonator. None of the embodiments of White operate in the manner recited in Claims 1-23.

First, the devices depicted in White do not include illumination unless the surface under inspection is within a predetermined range, which is between the focal saddles of the lens, as the laser ceases to lase outside of that range. Therefore, when the height of the point of inspection is outside of the focal saddle range, there is no illumination and no reflected light from the surface of interest.

Second, the laser in White as shown in Figure 3 of White produces a substantially constant output over the range in which the surface is within the saddle points of the lens focus. Therefore, it is clear that the laser output does not increase for features exceeding a predetermined height, it is either present or absent depending on whether or not the point of inspection is within the very narrow focal saddle range.

Finally, the detector in White is not a detector for detecting light reflected from the surface of interest as taught by the present application. The detector in White detects laser output intensity, and while the laser intensity is a product of a reflection between the surface under inspection, the detector is not detecting the reflection, but is indirectly measuring whether or not the point of inspection is within the focal saddle range of the lens.

The devices depicted in White are limited to detecting exact surface position, and do not include the capabilities of the present invention that measures non-linear variations of the amplitude reflected light over a continuous range of height and consequent reflection intensities.

Further, the prior art drawing of Figure 1 in the present application in combination with White does not yield the present invention as asserted by the Examiner and therefore it would not be obvious to combine the teachings of White with the teachings regarding the prior art as stated in the present application. On page 11, lines 6-13, it is pointed out that the apparatus depicted in Figure 1 cannot distinguish surface features exceeding a predetermined height, due to lack of sensitivity of the far-field apparatus depicted. The addition of elements of White to the depiction of Figure 1 does not provide the desired sensitivity and therefore there would be no motivation to combine the teachings of White with the apparatus depicted in Figure 1. In fact, the laser/lens elements of White, when added to the apparatus of Figure 1, yields no further utility than the apparatus of Figure 5 of White, i.e., an apparatus that only detects the presence of a surface feature having a height within a predetermined narrow range.

The further references cited by the Examiner also fail to teach essential functional features of the present invention as claimed. In particular, Menchalin (U.S. 4,659,234) and Baughman,

et al. teach a partially reflective surface positioned at a tuned optical distance with respect to a surface of interest whereby a sensitivity of light reflected from features on said surface of interest exceeding a predetermined height is increased. Neither do combinations of the above-recited references with White for the same reasons as mentioned above, that White only produces illumination and a detection of a single narrow height range.

The elements of the claimed invention in their functional relationship are further not known in the study of optics. Therefore, applicant believes that the rejection of Claims 1-23 under 35 U.S.C. §103(a) has been overcome.

CONCLUSION

For all of the reasons stated above, Applicant respectfully submits that none of the prior art references relied upon by the Examiner teach or suggest a structure or method in accordance with the present invention. Applicant respectfully submits that Applicant's claimed invention is deserving of patent protection because it describes a useful and functioning structure, which is patentably distinguishable over the prior art.

In conclusion, Applicant respectfully submits that this Amendment, in view of the Remarks offered in conjunction therewith, are fully responsive to all aspects of the objections and rejections tendered by the Examiner in the Office Action. Applicant respectfully submits that they have persuasively

demonstrated that the above-identified Patent Application, including Claims 1-23 are in condition for allowance. Such action is earnestly solicited.

It is not believed that this Amendment requires any fees, but if there are any fees incurred by this communication, please deduct them from our Deposit Account NO. 23-0830.

Respectfully submitted,

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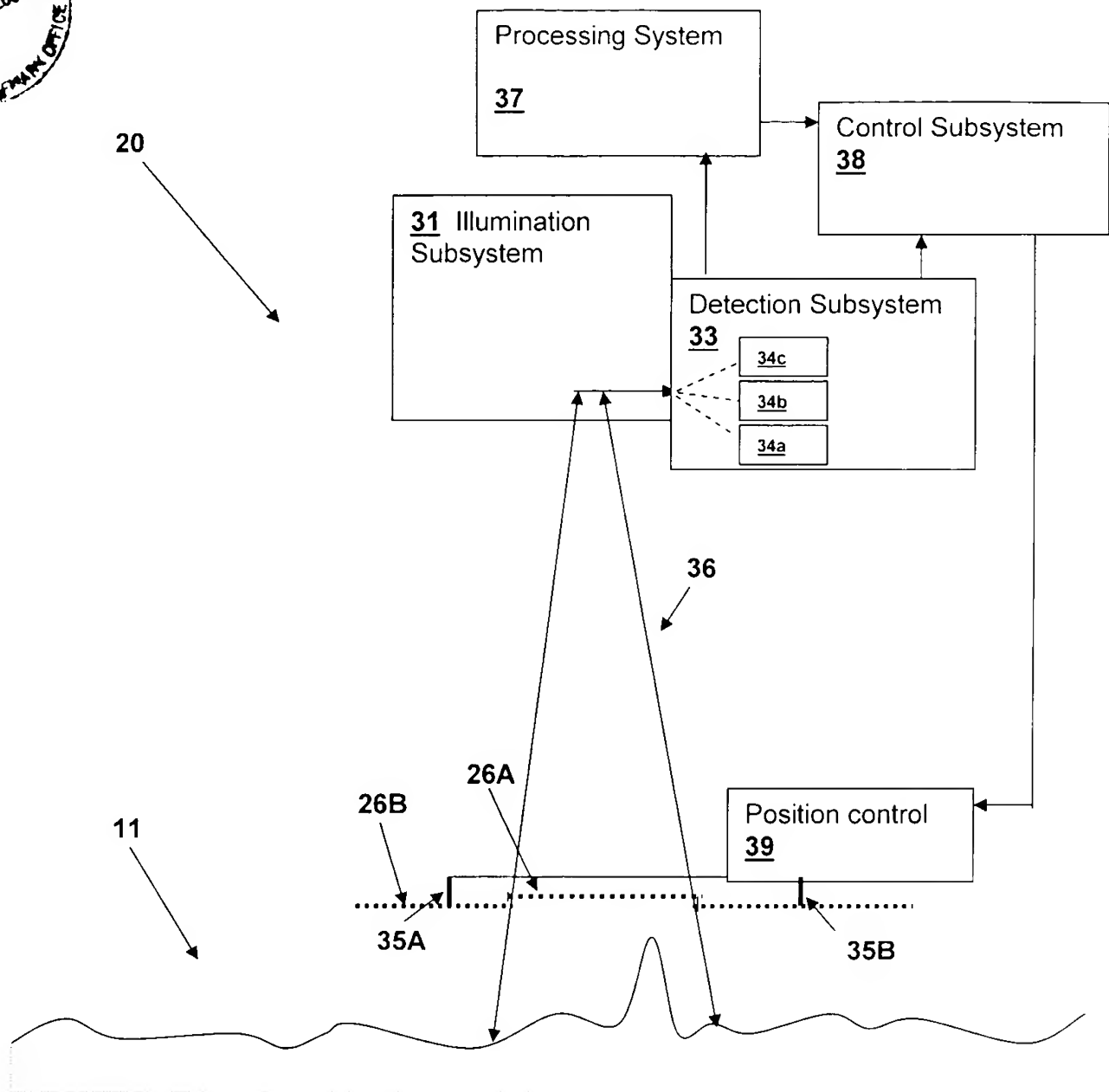


Fig. 6